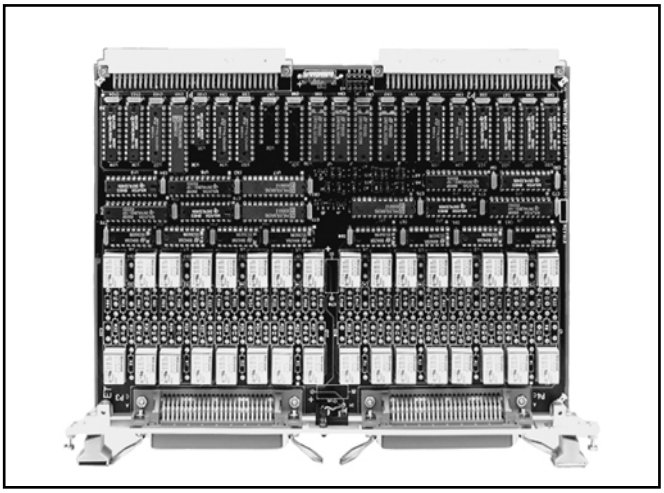
VMIVME-2232
32-Channel Relay Output Board with Built-in-Test (BIT)

- 32 relay output channels (one form C relay per channel)
- Contact ratings
  - — 60 W, 125 VA maximum switching power
  - — 220 VDC, 250 VAC maximum switching voltage
  - — 2 A maximum switching current
  - — 3 A maximum carry current
- Optional contact protection electronics for DC operation
- 8-, 16-, or 32-bit data transfers
- Built-in-Test (all active components are tested)
- Front panel with fail LED
- Compatible with the Intelligent I/O Controllers
- VxWorks driver available
- Software compatible with the VMIVME-2532 and the VMIVME-2533



OUTPUT SPECIFICATION SUMMARY

Output Connector Type: Dual 50-pin compatible connector (SCSI)

Output Organization: Four ports 8 bits wide

GENERAL SPECIFICATION SUMMARY

Compatibility: VMEbus specification-compatible double height form factor

Built-in-Test Features: This board is designed with internal logic that contains the state of each relay coil. This data can be read by the host during on-line or off-line operations to monitor the condition of the board. The data read back by the host will depend upon the board's mode of operation.

During off-line operations, the test mode is active. The board enters test mode under software control, on-board power up, or after a system reset. In test mode, the relay drivers are disabled, as a safety precaution, to prevent the relays from coming up activated. Special test data can be written to the board, and read back, as a *health* test for the data path to the relay drivers. The written data is read back from the output registers used to control the relay drivers. Unlike the on-line test described below, the data read back is true, not inverted.

When not in Test Mode, the relays on positive true boards are ACTIVATED (the normally open contacts are closed) if the data bit corresponding to the relay is set to a logic *one* in its Data Register. When not in Test Mode, the relays on negative true boards are ACTIVATED if the data bit corresponding to the relay is set to a logic *zero* in its Data Register. The VMIVME-2232, upon power up and reset, is configured in the Test Mode and all Data Registers in a logic *zero* state. Thus when ordering the negative true option, note the board powers up with data in the logic *zero* state and applied to the output of the data buffers, ready to activate the corresponding relays upon removal of the test mode condition. Therefore, this data must be initialized BEFORE removing the Test Mode condition, or else all of the relays will activate.

During on-line operations, the relay drivers are active and the read-back feature of the output registers is disabled. In this condition, when data is read back from the board, it is inverted. For example, when a logic *one* is written to a positive true board, the data read back will be a logic *zero* because the driver inverts its input data. The logic levels are reversed for negative true boards. Here a *zero* is written to activate a relay and a logic *one* will be read back.

Ordering Options

April 2, 1999 800-002232-000 H	A	B	C	–	D	E	F
VMIVME-2232 –			0	–			

A = Data Polarity
0 = Negative True ("0" Energizes Relay)
1 = Positive True ("1 Energizes Relay)**
B = Contact Protection*
0 = No Protection
1 = Contact Protection for 1 A Switched Current at 50 VDC Maximum (R = 5.6 Ω and C = 0.1 µF)
2 = Contact Protection for 1 A Switched Current at 200 VDC Maximum (R = 22 Ω and C = 0.1 µF)
C = 0 (Option reserved for future use)

Connector Data

Compatible Connector (SCSI type)	AMPHENOL No. 157-32500 or 850-57F-30500-20 or AMP 554085-1
PC Board Connector	AMP 554901

*Contact the factory for other contact protection options.
**REquired for operation with VMIC's family of IIOCs (VMIVME-901x, .906x).

For Ordering Information, Call:
1-800-322-3616 or 1-256-880-0444 • FAX (256) 882-0859
E-mail: info@vmic.com Web Address: www.vmic.com

Addressing Scheme: Four ports addressable on 8-, 16-, or 32-bit boundaries in the short I/O addressing. These ports are accessed as 8-, 16-, or 32-bit words.

Address Modifiers Codes: Jumper-selectable for short supervisory and/or short nonprivileged I/O access. Factory configured for short supervisory I/O accesses.

Control and Status Register (CSR): A Control and Status Register (CSR) is provided to control the front panel Fail LED, internal Built-in-Test features, and to enable/disable the relays.

Board Address: Address selection jumpers are provided to select board addresses within the short I/O memory map.

Fail LED: A front panel Fail LED is provided. The LED is illuminated at power up and extinguished under program control.

Contacts:

Maximum Switching Power: 60 W, 125 VA
Maximum Switching Voltage: 220 VDC, 250 VAC
Maximum Switching Current: 2 A DC or AC
Maximum Carry Current: 3 A DC or AC
UL/CSA Rating: 0.6 A at 110 VDC
0.6 A at 125 VAC
2.0 A at 30 VDC

Contact Life (Minimum Operation):
Mechanical (at 180 CPM): 10^8
Electrical: 5×10^5 at 2 A 30 VDC
2×10^6 at 1 A 30 VDC

PHYSICAL/ENVIRONMENTAL

Temperature: 0 to 55 °C, operating, -40 to 85 °C, storage

Humidity: 20 to 80 percent, noncondensing

Altitude: Operation to 10,000 ft

Cooling: Forced air convection

Power Requirements: 3.9 A at +5 V

MTBF: 70,540 hours (217F)

POSITIVE/NEGATIVE TRUE ORDERING INFORMATION — This board may be ordered with positive or negative true relay drivers. With positive true drivers, a relay is energized when a VMEbus logic *one* is written to the corresponding relay driver. Also, when using negative true drivers, a relay is energized when a VMEbus logic *zero* is written to the corresponding relay driver.

TRADEMARKS

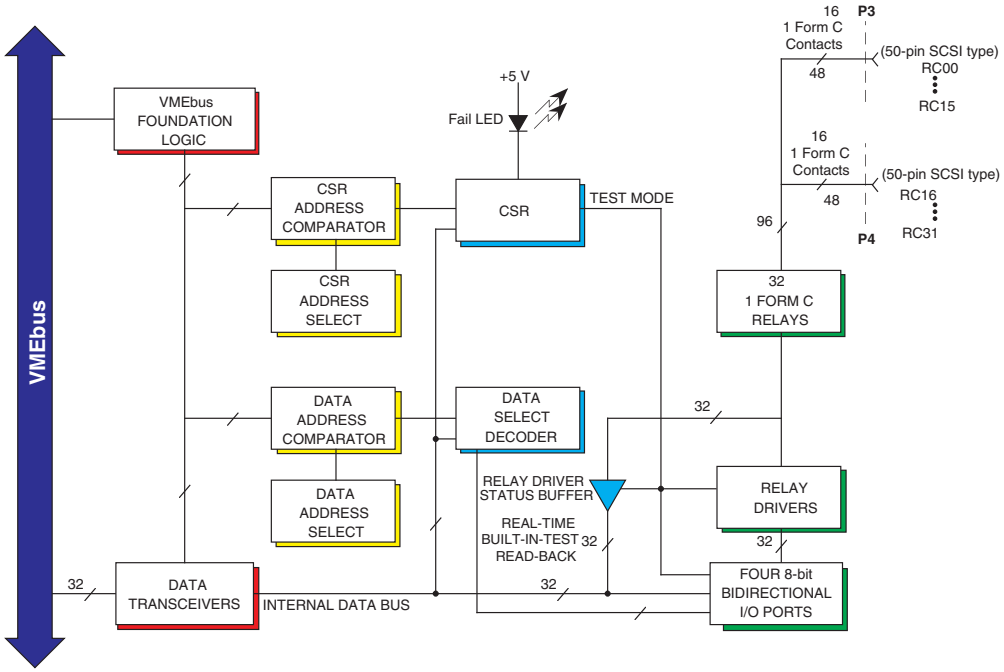


Figure 1. VMIVME-2232 Functional Block Diagram

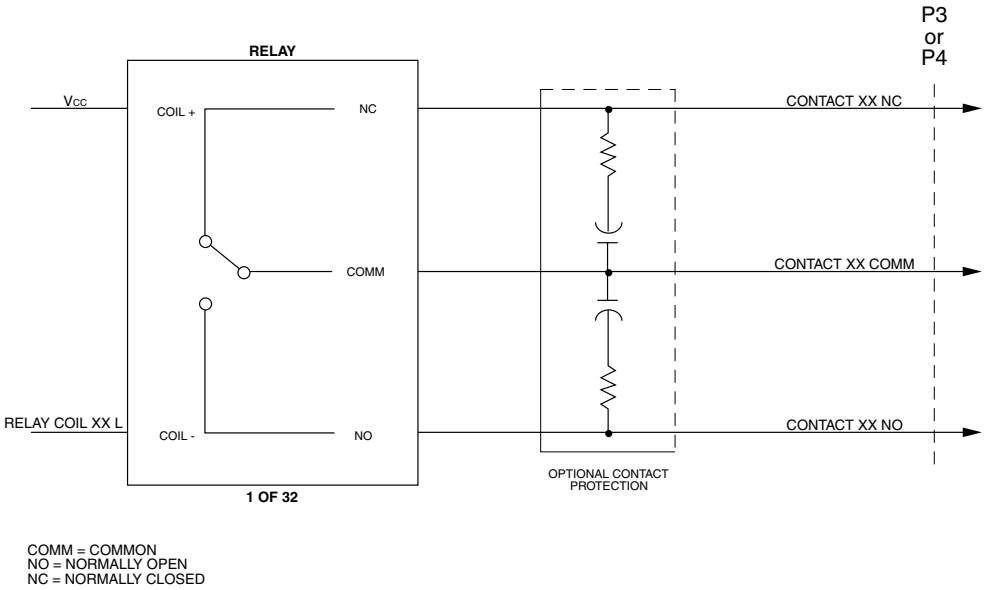


Figure 2. Typical Relay